

Site Name: Wisteria LF Sample Location: Census
 Personnel: JC Sample ID: Household (HW)

Date: 6/1/14 Field Conditions: pt. cloud + 50'

Condition of Well: G.O

Depth to Water (DTW): 2.1 Total Depth of Well (TD): 2.1

Well Diameter: 2" Well Diameter Constant (C): 2" = 0.163 4" = 0.653 6" = 1.469

One Well Volume (gallons) = (TD - DTW) x C: _____ Three Well Volumes: _____

Purge Equipment: well pump Pump Depth: _____ Start Time: 11⁰⁵

[illegible]

Sample Time: 1115 Sampling Method: Direct grab

Containers	Preservative	Parameters	Comments
3 x 40mL Vial	HCl	VOCs	
500mL Plastic	none	Sulfate, Chloride, pH, SC	
250mL Plastic	HNO ₃	Dissolved Metals - List 6	
250mL Plastic	H ₂ SO ₄	Nitrate+Nitrite	

Total Volume Purged: 50 Final Depth to Water: — End Time: —

Notes:

Sampler Signature:  Page I of 5

County Fergus
Facility & # Mister M - 302
Closure Landfarm
Finan Assur Liner
GW Corr Meas Methane
GW Monitoring O & M
GW Reports Run-on
Inspections
Other: _____

Site Name: Whisker LF Sample Location: WGR

Personnel: JC Sample ID: SKA

Date: 10-1-14 Field Conditions: gd. cloudy 40's gusty

Condition of Well: Good

Depth to Water (DTW): 41.25 Total Depth of Well (TD): 51'

Well Diameter: 2" Well Diameter Constant (C): 2" = 0.163 4" = 0.653 6" = 1.469

One Well Volume (gallons) = (TD - DTW) x C: $10'(.51)$ Three Well Volumes: 50.11

Purge Equipment: Dig 46 Biter Pump Depth: — Start Time: 1155

[illegible]

Sample Time: 12¹⁵ Sampling Method: SAA

Containers	Preservative	Parameters	Comments
3 x 40mL Vial	HCl	VOCs	very turbid
500mL Plastic	none	Sulfate, Chloride, pH, SC	is Salty - redd
250mL Plastic	HNO ₃	Dissolved Metals	
250mL Plastic	H ₂ SO ₄	Nitrate+Nitrite	

Total Volume Purged: 6.0 Final Depth to Water: — End Time: 12:30

Notes: * ph not working properly - need new probe

Sampler Signature:  Page 2 of 5

Page 3 of 5

Site Name: Wister in LF Sample Location: W-12

Personnel: rk Sample ID: SAA

Date: 10/1/14 Field Conditions: gd. cldy - 50°s

Condition of Well: Good

Depth to Water (DTW): 4.42 Total Depth of Well (TD): 1.4

Well Diameter: 2" Well Diameter Constant (C): 2" = 0.163 4" = 0.653 6" = 1.469

One Well Volume (gallons) = (TD - DTW) x C: 102(1.51) = 154 gal Three Well Volumes: _____

Purge Equipment: Diaphragm Blower Pump Depth: _____ Start Time: 13:20

大米

Sample Time: 14⁰⁰ Sampling Method: Dis. Boiler

.....

Total Volume Purged: 22 gal Final Depth to Water: — End Time: 1915

Notes: * fl gauge not functioning
** null gauge until governor stabilization $\pm 3-5\%$

Sampler Signature:  Page 4 of 5

Monitoring Well Purging and Sampling Form

Site Name: Wisker m LF Sample Location: W-11

Personnel: JC Sample ID: SA1

Date: 10-1-14 Field Conditions: 14, 12, 50's

Condition of Well: Good

Depth to Water (DTW): 31.02 Total Depth of Well (TD): 83

Well Diameter: 2" Well Diameter Constant (C): 2" = 0.163 4" = 0.653 6" = 1.469

One Well Volume (gallons) = (TD - DTW) x C: $52(.51)$ Three Well Volumes: 21

Purge Equipment: Discharge Bailer Pump Depth: — Start Time: 1:50

[illegible]

Sample Time: 15¹⁰ Sampling Method: Respirable boiler

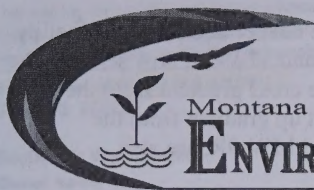
Containers	Preservative	Parameters	Comments
3 x 40mL Vial	HCl	VOCs	
500mL Plastic	none	Sulfate, Chloride, pH, SC	
250mL Plastic	HNO ₃	Dissolved Metals	
250mL Plastic	H ₂ SO ₄	Nitrate+Nitrite	

Total Volume Purged: 21 Final Depth to Water: _____ End Time: 15

Notes: * ph ~~put~~ no funding

Had to return 2 Disposable bowls from last singing event.

Sampler Signature: _____ Page 5 of 5



Montana Department of

ENVIRONMENTAL QUALITY

MEMO

TO: Solid Waste Files
Closed/Fergus Co.\Mister M Landfill\Lic. #302\Groundwater Reports

FROM: Martin Van Oort, Hydrogeologist – Solid Waste Section

DATE: April 25, 2013

SUBJECT: **Summary of Groundwater Monitoring at Closed Mister M Landfill, License #302**

Groundwater monitoring at the Mister M Landfill began in 1993 and was conducted by the owner until 1999 when he abandoned the facility. In the absence of the owner the Solid Waste Program has assumed control of the facility financial assurance to fund post closure care at the landfill. The Solid Waste Program contracted a consultant to conduct monitoring periodically from 2003 to 2007, and began conducting monitoring using program staff in 2009.

The majority of monitoring wells installed at the facility were initially completed in shallow minor water bearing units, and the only deeper wells were supply wells for the landfill office and the owner's house. Because the shallow wells did not consistently contain sufficient water to sample, the record of water quality is difficult to interpret. Concerns over substandard well construction also lead to several wells being abandoned and replaced in 1997. The only wells which have been consistently sampled since the beginning of monitoring are the office and house wells, and the data from these wells shows inconsistencies due to the difficulties in collecting high quality samples from water supply wells and changes in sampling techniques over time. Early sampling at the facility, from 1994 to 1999, was also frequently conducted by the owner personally, and did not follow standard sampling procedures or QA/QC requirements, resulting in poor quality data of questionable validity.

VOC contamination was first detected at the facility in 1994 and has been detected at widely varying concentrations in various wells during all subsequent monitoring. VOCs have most consistently been detected in the office well and Vinyl chloride and cis-1,2-Dichloroethene have exceeded groundwater protection standards at that location. VOCs have also been consistently detected in a shallow well near the office, MW-9R. Elevated inorganic parameters including Chloride, Iron, and Zinc have also been detected in the office well, but the metals may be attributable to contamination from previous domestic pump apparatus installed in the well.

Due to concerns that VOC contamination in the office well could be due to solvents introduced to the well by the owner's poor sampling hygiene, the Solid Waste Program conducted a pump test on the office well in 2009. The results of this test indicated that the contamination observed in this well likely did not originate at the well but rather came from an outside source.

In 2010 the Solid Waste Program installed two new monitoring wells in the deeper aquifer at the facility and abandoned several of the old shallow wells. These new wells, MW-11 and MW-12, now serve as the point of compliance for the facility. The house well, which is believed to be cross gradient from the landfill is sampled as a substitute "background" well, as no deep wells exist up gradient from the landfill. The two wells impacted by VOC contamination, the office well and MW-9R, are also monitored to track contaminant levels.

One VOC, cis-1,2-Dichloroethene, was detected at MW-12 during the initial two sampling events at this well, but has not been detected during the subsequent three sampling events. MW-12 is believed to be located down gradient from the office well, but the groundwater flow direction is uncertain because the deeper wells have not been surveyed. No VOCs have been detected in MW-11. VOC concentrations and the number of detected VOCs in the office well and in well MW-9R have been generally decreasing since May 2011.

Because all parameters in the new point of compliance wells have been below background concentrations, the facility returned to detection monitoring status following the October 2012 sampling event. Due to limited funds to continue monitoring at the facility, the analytical parameter list and number of well samples have been reduced over the past few years to reduce the cost of monitoring. If recent water quality improvements continue, a reduction to annual sampling may be possible in the near future.

Closed

County	Fergus
Facility & #	Mister M #392
Closure	Landfarm
Finan Assur	Liner
GW Corr Meas	Methane
GW Monitoring	O & M
<u>GW Reports</u>	Run-on
Inspections	
Other:	

MW-1

GWIC Id: 260297

Owner Name

MISTER M LANDFILL

Mailing Address

PO BOX 200901

City	State	Zip Code
HELENA	MT	59620

Well Address

N/A

City	State	Zip Code
N/A	N/A	N/A

Air Test *

12 gpm with drill stem set at 80 feet for hours.

Time of recovery 12 hours.

Recovery water level 35 feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Township	Range	Section	Quarter Sections
15N	19E	8	SE¼ SW¼
County	Geocode		

Section 8: Remarks

FERGUS

Latitude	Longitude	Geomethod	Datum
47.073722	-109.345861	NAV-GPS	NAD83
Addition	Block		Lot

Section 9: Well Log

[illegible]

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method: ROTARY

Section 5: Well Completion Date

Date well completed: Wednesday, October 20, 2010

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	82.5	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	82.5	2		280.0	THREADED	ABS-SCHED 40
2	3	6	0.250		WELDED	A53B STEEL

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
72.5	82.5	2		2"	FACTORY SLOTTED

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
1	70	BENTONITE GROUT	
70	82.5	10/20 SILICA SAND	

Name: MARK SMITH

Company: CENTRAL DRILLING INC

Address: 969 H STREET

City: LEWISTOWN MT 59457

License No: WWC-581

Date Certified: 2/22/2011

RECEIVED

FEB 28 2011

Dept. of Enviro.
Waste & Undergro.
Tank Management Bureau

WELL OWNER COPY

mw-12

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report was completed online by the driller. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Site Name: MISTER M LANDFILL
GWIC Id: 260299

Section 7: Well Test Data

Total Depth: 105
Static Water Level: 21
Water Temperature:

Air Test *

2 gpm with drill stem set at 105 feet for 1 hours.
Time of recovery 12 hours.
Recovery water level 21 feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 1: Well Owner

Owner Name
MISTER M LANDFILL
Mailing Address
PO BOX 200901

City State Zip Code
HELENA MT 59620

Well Address

N/A

City State Zip Code
N/A N/A N/A

Section 2: Location

Township Range Section Quarter Sections
15N 19E 8 SE 1/4 SW 1/4
County Geocode

FERGUS

Latitude Longitude Geomethod Datum
47.073306 -109.345222 NAV-GPS NAD83

Addition Block Lot

#5 BOYD CREEK RD

Section 8: Remarks

Section 9: Well Log

From	To	Description
1	11	RED CLAY
11	13	BROWN SANDSTONE
13	17	BROWN CLAY
17	21	RED SHALE
21	22	AS ABOVE MAROON
22	35	RED SHALE
35	42	GRAY GREEN & LIGHT GRAY SANDSTONE & SANDY SHALE
42	46	GRAY SHALE
46	49	GRAY SANDSTONE
49	63	GRAY SANDSTONE & SHALE
63	66	BROWN SHALE
66	86	BROWN TO GRAY SANDSTONE
86	87	GRAY SANDSTONE
87	96	RED SHALE
96	102	GRAY SANDSTONE

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method: ROTARY

Section 5: Well Completion Date

Date well completed: Wednesday, October 20, 2010

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	105	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	105	2		280.0	THREADED	ABS-SCHED 40
2	3	6	0.250		THREADED	A53A STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
95	105	2			FACTORY SLOTTED

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
1	92.5	BENTONITE GROUT	
92.5	105	10/20 SILICA SAND	

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: MARK SMITH
Company: CENTRAL DRILLING INC
Address: 969 H STREET
City: LEWISTOWN MT 59457
License No: WWC-581
Date Certified: 2/22/2011

Site Name: MISTER M LANDFILL
GWIC Id: 260299

Additional Lithology Records

From	To	Description
102	105	HARDER RED SHALE

REC'D

OCT 26 2011

DEPT. OF ENVIRO. QUALITY
WASTE & UNDERGROUND TANK
MANAGEMENT BUREAU

Closed

County Fergus

Facility & # Mr. M #302

Closure

Landfarm

Finan Assur

Liner

GW Corr Meas

Methane

GW Monitoring

O & M

GW Reports

Run-on

Inspections

Other: _____

Van Oort, Martin**From:** Anita Smith [centraldrilling@gmail.com]**Sent:** Friday, May 28, 2010 2:56 PM**To:** Van Oort, Martin**Subject:** Mister "M" Disposal Monitoring Wells

Mobe, demobe, decontaminate, drill pipe, bits, stabilizers, rig & water truck in Lewistown 2 times \$2,000.00

Drill 8" borehole install 6" steel surface casing \$50.00/ft. for 5 for for 2 wells. \$500.00

Cement 6" steel casing and 2' X 2' pad for 2 wells \$400.00

Drill 6" borehole estimated 120 feet \$40.00/ft for 2 wells \$9,600.00

Provide & install 2" screen and 2" riser pipe and centralizers \$1800/ft. estimated 120 ft for 2 wells \$4,320.00

Provide & install 10/20 colorado silica sand \$250.00 per hour for 2 hours for 2 wells \$1,000.00

Provide and install 2' of bentonite pellets for 2 wells \$300.00

Provide and install bentonite pellets or grout to -2' of surface for 2 wells \$1,000.00

Provide and install 2 - 6" steel locking monitor well covers and 2 - 2" J plug caps \$150.00

Pull casing out of 4 existing wells and haul off sight \$250.00 per well for 4 wells \$1,000.00

Plug and abandon 4 existing wells with bentonite pellets or grout \$500.00 per well for 4 wells \$2,000.00

5 hours skidsteer and operator sight clean up \$100.00 per hour \$500.00

**ESTIMATED
TOTAL****\$22,770.00**

Standby time rig, water truck, service truck 2 men \$300.00 per hour or \$2,500.00 per day

Air, rotary, top head drive drilling rig

5/28/2010

Closed

County Fergus

Facility & # Master M #302

Closure

Landfarm

Finan Assur

Liner

GW Corr Meas

Methane

GW Monitoring

O & M

GW Reports

Run-on

Inspections

Other: _____

CLOSED MISTER M LANDFILL, LICENSE #302

LEWISTOWN, FERGUS COUNTY, MONTANA

**GROUNDWATER MONITORING
SAMPLING AND ANALYSIS PLAN**

Prepared By:

Montana Department of Environmental Quality

Solid Waste Section

July 20, 2011

Internal Routing Slip

SW Section

Name		Initials
Joe Blaine		
Janet Handy (last)	1	JH
Mitzi Hansen		
Mary Hendrickson	2	MH
Renai Hill		
Bruce Meyer	3	BM
Darrell Stankey		
Tim Stepp		
Rick Thompson	4	RT
Martin Van Oort	5	MVO

Misc. / Notes

TABLE OF CONTENTS

LIST OF TABLES	v
LIST OF FIGURES	v
LIST OF APPENDICES	v
1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	1
2.1 LOCATION	1
2.2 SITE HISTORY	1
2.3 SITE HYDROGEOLOGY	2
2.4 SITE ACCESS	3
3.0 GROUNDWATER MONITORING PLAN	4
3.1 OBJECTIVES	4
3.2 SCHEDULE	4
3.3 FIELD PROCEDURES	4
3.3.1 Monitoring Wells	4
3.3.2 Monitoring Parameters	5
3.3.3 Water Level Measurements	5
3.3.4 Monitoring Well Purging	6
3.3.5 Sample Collection	7
3.3.6 Shipping and Handling	8
3.4 DATA HANDLING AND ANALYSIS	8
3.4.1 Statistical Analyses	8
3.4.2 Reporting	9
4.0 QA/QC PLAN	10
4.1 FIELD QA/QC PROCEDURES	10
4.1.1 Instrument Calibration	10

4.1.2	Equipment Decontamination Procedures	10
4.1.3	Field Documentation	10
4.1.4	Field QA/QC Samples	11
4.1.5	Chain-of-Custody Requirements	12
4.2	ANALYTICAL LABORATORY QA/QC PROCEDURES	12
4.2.1	Sample Receipt Procedures	12
4.2.2	Sample Holding Time Requirements	13
4.2.3	Data Reporting Requirements	13
4.2.4	Laboratory Internal QA/QC Plan	13
4.3	DATA VALIDATION	13
5.0	HEALTH AND SAFETY PLAN	16
5.1	SITE HAZARDS	16
5.1.1	General Hazards	16
5.1.2	Groundwater Monitoring Hazards	16
5.2	LEVEL OF PROTECTION	16
5.3	PERSONNEL DECONTAMINATION PROCEDURES	17
5.4	DISPOSAL OF PURGE WATER	17
5.5	EMERGENCY INFORMATION	17
6.0	REFERENCES	18

LIST OF TABLES

TABLE 1: ANALYTICAL PARAMETERS

TABLE 2: PURGING STABILIZATION CRITERIA

TABLE 3: SAMPLE BOTTLES AND PRESERVATIVES

TABLE 4: HOLDING TIMES FOR TABLE 1 PARAMETERS

LIST OF FIGURES

FIGURE 1: LOCATION MAP

FIGURE 2: FACILITY MAP

FIGURE 3: LOCATIONS OF GROUNDWATER MONITORING WELLS

FIGURE 4: LOCATION OF THE CENTRAL MONTANA MEDICAL CENTER

LIST OF APPENDICES

APPENDIX A: FIELD FORMS

5.1	Equipment Inventory	1
5.2	Field Data	2
5.3	Field Data	3
5.4	Field Data	4
5.5	Field Data	5
5.6	Field Data	6
5.7	Field Data	7
5.8	Field Data	8
5.9	Field Data	9
5.10	Field Data	10
5.11	Field Data	11
5.12	Field Data	12
5.13	Field Data	13
5.14	Field Data	14
5.15	Field Data	15
5.16	Field Data	16
5.17	Field Data	17
5.18	Field Data	18
5.19	Field Data	19
5.20	Field Data	20
5.21	Field Data	21
5.22	Field Data	22
5.23	Field Data	23
5.24	Field Data	24
5.25	Field Data	25
5.26	Field Data	26
5.27	Field Data	27
5.28	Field Data	28
5.29	Field Data	29
5.30	Field Data	30
5.31	Field Data	31
5.32	Field Data	32
5.33	Field Data	33
5.34	Field Data	34
5.35	Field Data	35
5.36	Field Data	36
5.37	Field Data	37
5.38	Field Data	38
5.39	Field Data	39
5.40	Field Data	40
5.41	Field Data	41
5.42	Field Data	42
5.43	Field Data	43
5.44	Field Data	44
5.45	Field Data	45
5.46	Field Data	46
5.47	Field Data	47
5.48	Field Data	48
5.49	Field Data	49
5.50	Field Data	50
5.51	Field Data	51
5.52	Field Data	52
5.53	Field Data	53
5.54	Field Data	54
5.55	Field Data	55
5.56	Field Data	56
5.57	Field Data	57
5.58	Field Data	58
5.59	Field Data	59
5.60	Field Data	60
5.61	Field Data	61
5.62	Field Data	62
5.63	Field Data	63
5.64	Field Data	64
5.65	Field Data	65
5.66	Field Data	66
5.67	Field Data	67
5.68	Field Data	68
5.69	Field Data	69
5.70	Field Data	70
5.71	Field Data	71
5.72	Field Data	72
5.73	Field Data	73
5.74	Field Data	74
5.75	Field Data	75
5.76	Field Data	76
5.77	Field Data	77
5.78	Field Data	78
5.79	Field Data	79
5.80	Field Data	80
5.81	Field Data	81
5.82	Field Data	82
5.83	Field Data	83
5.84	Field Data	84
5.85	Field Data	85
5.86	Field Data	86
5.87	Field Data	87
5.88	Field Data	88
5.89	Field Data	89
5.90	Field Data	90
5.91	Field Data	91
5.92	Field Data	92
5.93	Field Data	93
5.94	Field Data	94
5.95	Field Data	95
5.96	Field Data	96
5.97	Field Data	97
5.98	Field Data	98
5.99	Field Data	99
5.100	Field Data	100

1.0 INTRODUCTION

This document is the Sampling and Analysis Plan for Groundwater and Methane Monitoring at the closed Mister M Landfill, License #302, in Lewistown, Fergus County, Montana. As required by the Administrative Rules of Montana (ARM) 17.50.1404(1)(c) groundwater monitoring must be conducted throughout the post closure care period of all Class II landfills. The Groundwater Monitoring Sampling and Analysis Plan must be prepared to meet the requirements of ARM 17.50.1304 and ARM 17.50.1305 and must be updated at least every ten years for closed facilities as required by ARM 17.50.1304(4)(b). This plans must be approved by the Montana Department of Environmental Quality (MDEQ), Solid Waste Section and placed in the operating records of the facility.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

Mister M Landfill is in Fergus County approximately four miles east of Lewistown on US Highway 87, as shown in Figure 1. The facility is located in Township 15 North, Range 19 East, Section 8, at 7 Boyd Creek Road on a 48.974 acre parcel, and is owned by Marvin and Sandra Mintyala. As shown in Figure 2, the landfill lies in a small south facing coulee which drains to Boyd Creek. The landfill operations were conducted primarily on the 30 acres of the parcel that lie to the north of the old railroad grade.

2.2 SITE HISTORY

Waste disposal at the site began in 1956 and the property was purchased by the current owners in 1974. The State of Montana first issued the facility a solid waste disposal license in 1979. From 1990 to 1997 the facility actively operated under Class II landfill license #302. The waste stream was typical municipal solid waste; including paper, plastics, some household metals, and seasonally some woody debris and brush. White goods and ferrous and non-ferrous metals were accepted and stockpiled at the site for transfer to scrap dealers. The facility stopped receiving

wastes by September 15, 1998, and was granted interim closure status on December 5, 2000. Final closure of the site has not been granted due to outstanding obligations of the owners.

2.3 SITE HYDROGEOLOGY

According to the Geohydrologic Characterization (Gillespie, 1993 revised; and Gillespie, 1994) the landfill is underlain by the Kootenai Formation, which consists of predominately shale with some silty sandstone. A basal unit of sandstone in the Kootenai formation is the uppermost aquifer in the area. Minor amounts of water have been encountered in the upper portions of the Kootenai Formation but the monitoring wells completed at the site have generally been dry since their installation, or contained minimal volumes of water. Due to the transient nature of water in these wells, the groundwater flow direction in the upper portion of the Kootenai is undetermined but likely is similar to that in the basal sandstone aquifer. The office well, house well, MW-11, MW 12, and other residential wells in the area are completed in the basal sandstone unit of the Kootenai Formation and indicate a general direction of groundwater flow in this unit to the southwest. Because the wells located in the uppermost aquifer have not yet been surveyed a thorough evaluation of groundwater flow at the site is not possible.

Previous groundwater sampling at the facility was conducted by the owners or their consultants from 1993 to 1999 (Gillespie, 1995 and 1996; Energy Laboratories, 1997, 1998 (1), and 1998 (2); and Portage Environmental, 1999 and 2000). From 2003 to 2007 Tetra Tech, Inc was authorized by the MDEQ to conduct groundwater monitoring in the absence of action by the owners (Energy Laboratories, 2003, 2004, 2005, 2006, and 2007; Maxim, 2005; Tetra Tech, 2006 and 2008). MDEQ has conducted groundwater monitoring at the facility from January 2009 to the present (MDEQ, 2009 [1], 2009 [2], 2010 [1], 2010 [2], and 2011). The quality of the groundwater data from 1993 to 1999 is questionable due to inconsistent and non-standard sampling practices. The monitoring wells completed in the upper portion of the Kootenai Formation were frequently dry or had a limited volume of water when present, and the office and house wells that are completed in the uppermost aquifer are water supply wells not monitoring wells. These factors impart variability to the analytical data which must be considered when analyzing groundwater quality at the facility.

Groundwater at the facility typically exhibits a neutral to slightly alkaline pH between 7 and 8 and specific conductance (SC) between 600 and 700 $\mu\text{mhos/cm}$. Nitrate + nitrite is generally present in the shallower monitoring wells at concentrations of 1 to 3 mg/l, but not detected in the deeper wells. The concentrations of chloride, sulfate, and chemical oxygen demand (COD) are highly variable. The metals that are commonly detected at the facility are iron in the deeper wells, and selenium in the shallower wells. Several volatile organic compounds (VOCs) have been detected in the facility wells, but have generally been at or near the reporting limit with the exception of the Office Well (MW-OW) and MW-9R.

2.4 SITE ACCESS

On December 2, 2002 the MDEQ received permission from the owners' representative, Mr. Timothy O'Hare, to access the site to conduct post closure care activities in the absence of the owners. Access to the site is controlled by a locked gate at the entrance. Access to the monitoring wells is controlled by locked caps. The keys to the locks can be obtained from the MDEQ, Solid Waste Section.

3.0 GROUNDWATER MONITORING PLAN

3.1 OBJECTIVES

The objective of this Groundwater Monitoring Plan is to describe the groundwater monitoring program for the Mister M facility as required in ARM Title 17, Chapter 50, Subchapter 13. This includes describing the schedule of monitoring, the locations and parameters that will be monitored, the field procedures that will be followed during sampling, and how the resulting data will be analyzed and reported. The facility is currently in assessment level monitoring, the goal of which is to assess and monitor the nature and extent of groundwater contamination already detected and detect statistically significant changes in water quality parameters that may indicate further releases of contamination from the landfill to groundwater.

3.2 SCHEDULE

As required ARM 17.50.1307 groundwater monitoring at the facility will be conducted on an annual and semi-annual basis. Annual sampling will be conducted each year in May or June, when groundwater levels should be higher due to the spring snowmelt. The semi-annual sampling event will be conducted in October or November.

3.3 FIELD PROCEDURES

The following field procedures will be used during each sampling event. Consistent and proper groundwater sampling methods and sample handling techniques are necessary to ensure that the analytical results are valid and legally defensible.

3.3.1 Monitoring Wells

There were several monitoring wells installed at the facility in the 1990's, however, due to poor record keeping and well maintenance, location and identification of the monitoring wells is problematic. These wells were completed in the upper portion of the Kootenai Formation and most were abandoned in October 2010. Three of these wells, MW-5, MW-6, and MW-9R remain at the facility and are used for monitoring. MW-5 and MW-6 are used for water level

measurements only. Two new monitoring MW-11 and MW-12 were installed in the uppermost aquifer October 2010. The monitoring wells currently sampled or used for water level measurements are shown in Figure 3. MW-5 is up-gradient of the landfill and MW-6 and the house well (MW-HW) are cross-gradient. All other wells are down-gradient of the landfill area. The point of compliance wells are MW-11 and MW-12. MW-OW and MW-9R are located in the VOC plume and are monitored to assess the nature of the contamination. If non-dedicated or non-disposable sampling equipment is used, the monitoring wells will be sampled in the following order: MW-HW, MW-11, MW-12, MW-9R, and MW-OW. QA/QC samples including a field duplicate and trip blank will be collected during each sampling event as described in Section 4.1.4.

3.3.2 Monitoring Parameters

As allowed in ARM 17.50.1307, the MDEQ has approved a modified assessment monitoring parameter list. This parameter list will be used for both annual and semi-annual assessment monitoring events. The background and point of compliance monitoring wells (MW-HW, MW-11, and MW-12) at the Mister M facility will be sampled for all of the parameters listed in Table 1. Parameters shown in **Bold** in Table 1 will be collected at MW-9R, and parameters shown in *italics* in Table 1 will be collected at MW-OW. The VOCs samples will be collected first; nitrate + nitrite second; chloride, sulfate, pH, and SC third; and finally dissolved metals. In addition, pH, SC, and temperature will be measured in the field following well purging.

3.3.3 Water Level Measurements

The static water levels in wells MW-5, MW-6, MW-9R, MW-11, MW-12, and MW-OW will be measured prior to each sampling event. The static water level in MW-HW will not be measured due to the well's construction as a water supply well. Static water levels will be measured as required in ARM 17.50.1305(5) using a decontaminated electric water level probe. The water level probe will be tested and then lowered into the well until the probe indicates that water has been encountered. The water level probe will then be raised out of the water and lowered back to the air-water interface slowly for a precise measurement of the water level. This depth will be double-checked to ensure accuracy. The reference point for the water level measurements will

be the north side of the inner well casing unless otherwise marked. All water level measurements will be recorded on the Water Level Measurement Form included in Appendix A.

3.3.4 Monitoring Well Purging

Each monitoring well will be purged prior to sampling to ensure that the samples collected are representative of groundwater and not stagnant water in the well bore. The well purging procedures for this facility vary due to the well construction details. The wells will be purged using a new disposable polyethylene bailer. MW-HW has a permanently installed pump and is purged and sampled from a frost-free spigot near the house. The Monitoring Well Purging and Sampling Form included in Appendix A will be completed for each well that is sampled.

Prior to purging, the static water level and total depth of the well will be measured. Static water level will be measured at all wells except MW-HW as described in Section 3.3.3 and recorded. The total depth of the well will be measured at MW-9R, MW-11, MW-12, and MW-OW by sounding the well with the water level probe. To sound the well, the water level probe will be turned off and lowered into the well until the reduction of tension on the tape indicates that the probe is at the bottom of the well. This depth will then be recorded and corrected for the distance between the probe electrode and the bottom of the probe. The volume of water in the well will then be calculated using the following formula:

$$\text{Well Volume (gal)} = [\text{Total Depth (ft)} - \text{Static Water Level in (ft)}] * C$$

where C = 0.163 for a 2 inch well and 0.653 for a 4 inch well. The result will be recorded and multiplied by three to determine the volume necessary for purging as described below.

When purging, the bailer will be lowered into the well and removed slowly so as to minimize the agitation of the water in the well. The bailer will not be allowed to touch the ground or any other object and will only be handled with clean gloves when emptying. The volume of water purged will be measured by discharging the purge water into a vessel of known volume, such as a five gallon bucket. The field parameters of the purge water including at least pH, SC and temperature will be measured at least once per well volume, and no more frequently than once per half well volume. For monitoring wells MW-9R, MW-11, and MW-12 purging will continue until three well volumes have been removed and the field parameter readings have stabilized according to

the criteria in Table 2. If a well is purged dry, it will be allowed to recover to 90% of the initial static water level or for a maximum of two hours and then sampled. Because MW-OW and MW-HW were constructed as water supply wells and not monitoring wells these wells will be purged until the stabilization criteria in Table 2 are met for three consecutive readings at least five minutes or five gallons apart, whichever is greater. A minimum of one well volume of water will also be removed when purging well MW-OW.

3.3.5 Sample Collection

After purging is complete the samples will be collected in the order listed in Section 3.3.2 and Table 3 using pre-cleaned bottles supplied by the laboratory. Each sample bottle will be labeled in the format: MrM-XXXX, where XXXX is the sample location identification. The Office Well and House Well will be abbreviated as MW-OW and MW-HW respectively. The labels for each sample bottle will also contain the date and time of collection. Table 3 shows the type and size of bottles, and the preservative that will typically be used for the samples. The bottle type and size may vary depending on what is supplied by the laboratory.

At MW-HW the flow rate at the spigot will be reduced during sampling. For the samples collected using a bailer, they will be collected from the bottom of the bailer using a bailer draining device, not by pouring water out of the top of the bailer. All sample bottles will be filled slowly to minimize turbulence or aeration of the water. The preservative will be added to the VOCs vials before they are filled, and they will not be allowed to overflow. A small amount of water placed in the vial cap will be used to complete the filling of the VOCs vials, producing a meniscus over the mouth of the vial. The cap will then be carefully fitted and the vial checked for air bubbles by inverting it and tapping the side. If air bubbles are present in the vial it will be opened, emptied, re-preserved, and a new sample will be collected as described above. All other samples will be collected by filling the bottles to a level slightly below the top, then adding the preservative as necessary. The dissolved metals samples will be field filtered using a disposable 0.45 micron filter attached directly to the outlet port of the bailer draining device. If insufficient water is available to collect all the samples they will be collected with the following priority: VOCs; dissolved metals; nitrate + nitrite; chloride, sulfate, pH, and SC.

3.3.6 Shipping and Handling

All samples will be placed on ice in coolers immediately after collection, and will remain on ice or in a refrigerator at a temperature of $4\pm 2^{\circ}\text{C}$ until delivered to the analytical laboratory. To prevent freezing of the samples, in cold weather ice will not be used. The samples will be delivered to the laboratory by hand or via a shipping service either the same day or next business day after the completion of sampling. Chain-of-custody procedures will be followed as described in Section 4.1.5.

3.4 DATA HANDLING AND ANALYSIS

When the analytical data is received from the laboratory it will be checked for completeness and then validated as described in Section 4.3. The laboratory will be contacted if there is any missing data or to resolve any validation issues. After the data is validated, it will be entered into a database containing all groundwater data for the Mr. M facility in the format required for the statistical analysis.

3.4.1 Statistical Analysis

The purpose of statistical analysis for a facility in assessment level monitoring is to assess the nature and extent of previously detected contamination and identify any statistically significant increases over background levels that may indicate a new release of contamination from the landfill. According to ARM 17.50.1305(11) the owner or operator must determine if a statistically significant increase over background values has occurred by comparing the groundwater quality of each parameter to its background value at each point of compliance well.

For the point of compliance wells (MW-11 and MW-12), MW-HW will be used as a substitute for a background well. Although MW-HW is cross-gradient to the landfill, data from previous analyses from MW-HW appear to represent natural groundwater conditions in the uppermost aquifer.

The distribution of the dataset from the background well will be determined for each parameter prior to performing the statistical analyses. If the data is determined to have a normal

distribution, a parametric test will be performed on the data. If a transformation is required to normalize the data, a parametric test will be performed using the transformed data. If the data is determined to have a non-normal distribution, a non-parametric test will be performed. For all parameters that are detected in the compliance wells, the data from the compliance wells will be compared to the appropriate background dataset using a prediction interval analysis. If a parameter is detected at a statistically significant level above background, a non-parametric test for trend will be performed to assist in the determination if the exceedance represents a statistical outlier or a significant increasing trend. The test for trend will also be conducted for all parameters detected in the assessment wells, MW-9R and MW-OW, to evaluate any changes in contaminant concentrations in those wells. In addition, a historical concentration plot will be prepared for all parameters detected in compliance and assessment wells to help analyze temporal trends.

All parameters in the point of compliance wells which exceed background levels will also be compared to the appropriate groundwater protection standard using a compliance interval analysis. As described in ARM 17.50.1307(5), (6), and (7) if all parameters in the point of compliance wells are below background levels, the facility may return to detection monitoring; if all parameters are below groundwater protection standards, but any remain above background the facility will remain in assessment monitoring; and if any parameter exceeds a groundwater protection standard, an assessment of corrective measures will be initiated.

3.4.2 Reporting

The sampling results, groundwater elevation data, and any deviations from this Sampling and Analysis Plan will be reported to the MDEQ, Solid Waste Section following sampling and analysis. This report will include copies of the field data sheets, chain-of-custody documents, laboratory analytical report, and laboratory QA/QC report. This report will also include a determination of groundwater flow direction and seepage velocity, and the results of the statistical analysis.

4.0 QA/QC PLAN

4.1 FIELD PROCEDURES

This section describes the field QA/QC procedures that will be implemented during groundwater and methane monitoring to ensure that the data produced is valid and legally defensible.

4.1.1 Instrument Calibration

All field instruments used during groundwater monitoring will be calibrated according to manufacturer specifications at the beginning of each sampling event. Additionally, instrument readings will be compared to previous measurements at the same location to check for consistency. If at any time an instrument reading is considered suspect, the instrument will be recalibrated. The water quality meters will be calibrated to appropriate reference solutions for the parameters being measured, and the calibration will be documented on the Water Quality Meter Calibration Form included in Appendix A.

4.1.2 Equipment Decontamination Procedures

All non-disposable equipment that comes into contact with groundwater will be decontaminated between monitoring wells. The water level probe and water quality meter reservoir (container or flow-through cell) will normally be decontaminated by rinsing it with potable water. If visible contamination is noted (such as dirt, iron staining, or oily residues) then the equipment will be scrubbed with a soap solution prior to the potable water rinse. The module containing the sensors of the water quality meter will only be decontaminated by rinsing it with potable water or de-ionized water, as cleaning agents can damage the instrument's sensors. Potable water can be obtained from any drinking water source and should be stored in clean sealed containers. De-ionized water can usually be supplied by the laboratory.

4.1.3 Field Documentation

A field logbook will be kept to record the details of each sampling event. The field logbook will be a bound book with waterproof pages. Information that will be recorded in the field logbook for each event includes:

1. Date(s)
2. Personnel on site
3. Times of arrival and departure
4. Weather conditions
5. Details of activities conducted including time(s) and references to forms completed
6. Details of any variances from this SAP including the reason for the variance
7. Details of interactions with any persons while on-site.

All entries in the field logbook will be made in waterproof ink. Each page of the field logbook should be signed and dated by the person or persons making the entries. Any mistakes or changes should be lined out and initialed.

In addition to the field logbook, all appropriate field forms from Appendix A will be completed during each sampling event. For each sampling event, a Monitoring Well Purging and Sampling Form for each well, a Water Quality Meter Calibration Form, and a Water Level Measurement Form should be completed. All forms should be filled in completely and signed by the person who completes it. If an entry on the form does not apply, it should be marked N/A and explained in the notes section if necessary.

4.1.4 Field QA/QC Samples

In order to verify data quality, field QA/QC samples will be collected during each groundwater sampling event. The QA/QC samples will include a field duplicate and trip blanks. One field duplicate will be collected during each sampling event. Trip blanks will be included with each shipment of samples that includes a regular sample for VOCs.

The field duplicate is collected to analyze the precision of the sampling and analytical methods. The duplicate sample will be collected at a location selected at random from the background and point of compliance wells. The duplicate samples will be collected concurrently with the regular samples from the selected location. For example: 6 vials will be collected for VOCs instead of 3. Two will be labeled with the regular sample designation and two will include the suffix -DUP. For dissolved metals samples, the same filter should be used for both the regular sample and the duplicate sample. The field duplicate should be analyzed for all parameters in Table 1.

The trip blanks are used to detect possible contamination of the samples during transport or by the analytical laboratory. The trip blanks are filled with deionized water by the analytical laboratory and included with the sample bottles. The trip blanks should remain with the sample bottles at all times and should not be opened by the field personnel. The trip blanks are analyzed for VOCs only.

4.1.5 Chain-of-Custody Requirements

To produce evidence quality sampling data, the chain-of-custody of the samples must be maintained and documented from the time of sampling until receipt by the laboratory. The documentation of the chain-of-custody will be made on a Chain-of-Custody Form (COC) similar to the one included in Appendix A. The samples are considered to be in the custody of an individual if they are physically in their possession (i.e. within their field of view) or in secure storage (such as a locked vehicle). All of the samples should be listed on the COCs, and each sample bottle should be accounted for individually. If the samples are shipped by a commercial carrier, each cooler containing samples should be sealed with two signed custody seals, placed such that the cooler cannot be opened without destroying the seal. When properly sealed with signed custody seals, the samples are considered to be in the custody of the signer until the seal is broken. The COCs must be signed by the field personnel prior to relinquishing the samples for transport, signed by any transporters that have custody of the samples, and signed by laboratory personnel upon receipt.

4.2 ANALYTICAL LABORATORY QA/QC PROCEDURES

This section describes the minimum QA/QC procedures that the contracted analytical laboratory will follow to ensure that groundwater analytical results produced from each sampling event are valid and legally defensible.

4.2.1 Sample Receipt Procedures

Upon receipt by the laboratory the samples will be inventoried and compared to the COCs. Any differences between the COCs and the samples received will be resolved by contacting the

sampling personnel. The samples will be checked for temperature compliance and any deficiencies will be noted. The preservation of the samples will be checked by testing pH when appropriate, and all deficiencies will be noted and corrected.

4.2.2 Sample Holding Time Requirements

To ensure valid analytical data, each analysis must be conducted within a specified holding time following sampling. The allowable holding times for all parameters are shown in Table 4.

4.2.3 Data Reporting Requirements

The laboratory analytical report should include the values for all parameters, including estimated values below the reporting limit. For each parameter any necessary qualifiers, the reporting limit, method detection limit, and the data and time of analysis should also be reported. The laboratory analytical report should also include the results of the internal laboratory QA/QC samples that are associated with the field samples. Copies of the sample log in sheets and COCs should also be included.

4.2.4 Laboratory Internal QA/QC Plan

The laboratory contracted to analyze the groundwater samples will have a written internal QA/QC plan that meets USEPA requirements for RCRA analytical laboratories.

4.3 DATA VALIDATION

All analytical data will be validated after receipt from the laboratory to ensure that the results are legally defensible. The validation process will be conducted by a qualified groundwater scientist and will include checks for proper sample preservation, holding time compliance, duplicate precision, control and spiked sample accuracy, and blank contamination.

The temperature at receipt by the laboratory will be checked on the laboratory sample log in sheet. If the temperature is greater than 6°C, or if frozen samples were received, the results will be flagged with a 'T' qualifier, indicating that the results are considered estimated due to non-compliant temperature. Samples that are hand delivered to the laboratory immediately after

sampling will be accepted at greater than 6°C if there is evidence that cooling has begun. The pH of metals, nutrients, and cyanide samples will be checked on the laboratory log in sheet, and the pH of VOCs samples will be checked in the analytical report. Samples with a pH out of compliance by greater than two standard units will be flagged with a 'P' qualifier, indicating that the results are considered estimated due to non-compliant pH. If a non-compliant pH is corrected by the laboratory within 24 hours of sample collection that sample will be considered compliant. If a VOCs sample is analyzed within seven days of sample collection the pH requirement does not apply.

Compliance with the holding time requirements for the samples will be checked by comparing the analysis date and time from the analytical report to the date and time the sample was collected. If the holding time is exceeded the results will be flagged with an 'H' qualifier, indicating that the results are considered estimated due to a holding time exceedance.

The relative percent difference (RPD) for duplicate sample pairs will be calculated to check duplicate precision. The RPD of both field and laboratory duplicates will be considered. If the RPD for a parameter is greater than twenty percent for results greater than five times the reporting limit, or greater than one reporting limit different for results less than five times the reporting limit, all associated results will be flagged with an 'P' qualifier, indicating that the results are considered estimated due to poor duplicate precision.

The results of laboratory control and spike samples will be reviewed in the laboratory QA/QC report. If the results for any parameter fall outside of the laboratory high or low limits the associated sample results will be flagged according to their bias. A 'K' qualifier indicates that the sample results may be biased high and an 'L' qualifier indicates that the sample results may be biased low. 'K' qualifiers will not be reported for non-detect values because the high bias is irrelevant. If the results for a single parameter both exceed the high limit and are less than the low limit in separate control or spiked samples the associated sample results will be flagged with an 'A' qualifier, indicating that the results are considered to be estimated due to poor accuracy of control and spiked samples.

The results of field and laboratory blanks will be reviewed in the laboratory analytical report, and any detections will be compared to the analytical results for the associated samples. If the sample results for any parameter fall within five times the value detected in an associated blank the results will be flagged with a 'B' qualifier, indicating that the parameter detection may be due to field or laboratory contamination and not representative of actual groundwater conditions.

5.0 HEALTH AND SAFETY PLAN

5.1 SITE HAZARDS

This section describes the hazards that may be generally encountered at the Mister M Landfill facility, as well as hazards specific to groundwater monitoring activities, and the procedures that will be used by the field personnel to minimize the risks associated with these hazards.

5.1.1 General Hazards

The Mister M Landfill is closed, thus there are no hazards due to landfill operations. A moderate amount of junk material is located throughout the facility, thus care should be taken when driving or walking the site. The structures on the site have not been maintained since closure and should be avoided when possible. Rattlesnakes are native to Montana and have been observed in Fergus County, although none have been reported at this site. General weather related hazards such as heat, cold, mud, dust, snow and ice, and lightning could also be encountered at the site.

5.1.2 Groundwater Monitoring Hazards

Wasps, bees, and spiders can be found in monitoring well casings, thus care should be taken when opening the wells. The twine used with bailers can cause injury to exposed flesh, thus work gloves should be worn when bailing. The preservatives used in groundwater samples (sulfuric, nitric, and hydrochloric acid) are strong chemicals, and thus chemical resistant gloves should be worn at all times when handling the preservatives. The groundwater at the Mister M Landfill is generally not hazardous, although several parameters have exceeded groundwater protection standards. Under no conditions should groundwater from the site be ingested.

5.2 LEVEL OF PROTECTION

The general level of protection required at the Mister M facility is modified OSHA Level D. This level of protection includes:

1. Sturdy work boots
2. Long sleeved shirt and long pants

3. Work gloves

Additional personal protective equipment required during groundwater sampling includes eye splash protection and disposable chemical resistant gloves.

5.3 PERSONNEL DECONTAMINATION PROCEDURES

Personnel decontamination is not a routine procedure during groundwater or methane monitoring activities at the Mister M facility. Disposable chemical resistant gloves should be changed between each well. If site groundwater comes into contact with skin or eyes it should be rinsed with potable water. If personnel are contaminated by contact with preservatives, remove any contaminated clothing, flush contaminated skin and/or eyes with large amounts of water for at least fifteen minutes, and get medical aid immediately.

5.4 DISPOSAL OF PURGE WATER

All purge water generated at the Mister M facility will be disposed of on the ground at the facility.

5.5 EMERGENCY INFORMATION

Emergency services can be reached by dialing 911. If non-emergency medical attention is needed, the nearest hospital to the Mr. M facility is the Central Montana Medical Center at 408 Wendell Avenue in Lewistown, Montana. Figure 4 is a map of the location of and directions to the Central Montana Medical Center.

6.0 REFERENCES

- Energy Laboratories, 1997, Analytical Results, October 1997 Sampling
- Energy Laboratories, 1998 (1), Analytical Results, June 1998 Sampling
- Energy Laboratories, 1998 (2), Analytical Results, November 1998 Sampling
- Energy Laboratories, 2003, Analytical Results, November 2003 Sampling
- Energy Laboratories, 2004, Analytical Results, August 2004 Sampling
- Energy Laboratories, 2005, Analytical Results, November 2005 Sampling
- Energy Laboratories, 2006, Analytical Results, November 2006 Sampling
- Energy Laboratories, 2007, Analytical Results, June 2007 Sampling
- Gillespie, Robert W. P.E., 1993 revised, "Geohydrologic Characterization, Mister M Landfill, Lewistown, Montana"
- Gillespie, Robert W. P.E, 1994, "Addendum to Site Characterization, Mister M Landfill, License No. 302, Lewistown, Montana"
- Gillespie, Robert W. P.E, 1995, "Annual Groundwater Quality Report, Mister M Landfill Site, Lewistown, Montana"
- Maxim Technologies, 2005, "November 2005 Groundwater Monitoring Field Notes, Mister M Landfill, Lewistown, Montana"
- MDEQ, 2009 [1], "Closed Mister M Landfill, License #302, Lewistown, Fergus County, Montana, January 2009 Groundwater and Methane Semi-Annual Monitoring Results"
- MDEQ, 2009 [2], "Closed Mister M Landfill, License #302, Lewistown, Fergus County, Montana, June 2009 Groundwater and Methane Monitoring Results and Statistical Analyses"
- MDEQ, 2010 [1], "Closed Mister M Landfill, License #302, Lewistown, Fergus County, Montana, October 2009 Groundwater and Methane Monitoring Results and Statistical Analyses"
- MDEQ, 2010 [2], "Closed Mister M Landfill, License #302, Lewistown, Fergus County, Montana, October 2010 Monitoring Well Installation, Development, and Abandonment, and 2010 Groundwater and Methane Monitoring Results and Statistical Analyses"
- MDEQ, 2011, "Closed Mister M Landfill, License #302, Lewistown, Fergus County, Montana, May 2011 Groundwater Monitoring Results and Statistical Analyses"

Portage Environmental, 1999, "Mr. M Landfill, Water Analysis Report"

Portage Environmental, 2000, "GW Monitoring Data for Mister M Landfill"

R.W. Gillespie and Associates, Inc, 1996, "Semi-Annual Groundwater Sampling; Evaluation of Hydraulic Connections; Evaluations of Sampled Water as Leachate, Mister M Disposal Landfill – License No. 302, Lewistown, Montana"

Tetra Tech, Inc, 2006, "November 2006 Groundwater Monitoring Field Notes, Mister M Landfill, Lewistown, Montana"

Tetra Tech, Inc, 2008, "December 2007 Groundwater Monitoring Field Notes and Laboratory Report, Mister M Landfill, Lewistown, Montana"

TABLES

Table 1: Analytical Parameters

Inorganics

<i>Chloride</i>	<i>Sulfate</i>	<i>pH</i>	<i>Specific conductance</i>
Nitrate + Nitrite (as N)			

Dissolved Metals

Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)
Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)
Iron (Fe)	Lead (Pb)	Nickel (Ni)	Selenium (Se)
Silver (Ag)	Thallium (Th)	Vanadium (V)	Zinc (Zn)

Volatile Organic Compounds (VOCs by EPA method 8260)

<i>Acetone</i>	<i>Acrylonitrile</i>
<i>Benzene</i>	<i>Bromochloromethane</i>
<i>Bromodichloromethane</i>	<i>Bromoform</i>
<i>Bromomethane (Methyl bromide)</i>	<i>Carbon disulfide</i>
<i>Carbon tetrachloride</i>	<i>Chlorobenzene</i>
<i>Chlorodibromomethane</i>	<i>Chloroethane</i>
<i>Chloroform</i>	<i>Chloromethane (Methyl chloride)</i>
<i>1,2-Dibromo-3-chloropropane (DCBP)</i>	<i>1,2-Dibromoethane (EDB)</i>
<i>Dibromomethane (Methylene bromide)</i>	<i>1,2-Dichlorobenzene</i>
<i>1,4-Dichlorobenzene</i>	<i>trans-1,4-Dichloro-2-butene</i>
<i>1,1-Dichloroethane</i>	<i>1,2-Dichloroethane</i>
<i>1,1-Dichloroethene</i>	<i>cis-1,2-Dichloroethene</i>
<i>trans-1,2-Dichloroethene</i>	<i>Dichlorodifluoromethane</i>
<i>1,2-Dichloropropane</i>	<i>cis-1,3-Dichloropropene</i>
<i>trans-1,3-Dichloropropene</i>	<i>Ethylbenzene</i>
<i>2-Hexanone (Methyl butyl ketone)</i>	<i>Iodomethane (Methyl iodide)</i>
<i>Methylene chloride</i>	<i>Methyl ethyl ketone (MEK)</i>
<i>4-Methyl-2-pentanone (Methyl isobutyl ketone)</i>	<i>Styrene</i>
<i>1,1,1,2-Tetrachloroethane</i>	<i>1,1,2,2-Tetrachloroethane</i>
<i>Tetrachloroethene</i>	<i>Toluene</i>
<i>1,1,1-Trichloroethane</i>	<i>1,1,2-Trichloroethane</i>
<i>Trichloroethene</i>	<i>Trichlorofluoromethane</i>
<i>1,2,3-Trichloropropane</i>	<i>Vinyl acetate</i>
<i>Vinyl chloride</i>	<i>Xylenes</i>

Table 2: Purging Stability Criteria

<u>Parameter</u>	<u>Stabilization Criteria</u>
pH	+/- 0.1 standard units
Specific conductance (SC)	+/- 3%
Temperature	+/- 10%

Table 3: Sample Bottles and Preservatives

<u>Parameters</u>	<u>Bottle(s)</u>	<u>Preservation Method</u>
VOCs	3 x 40mL Vials	HCl to pH <2, cool to 4°C
Nitrate + Nitrite	250mL Plastic	H ₂ SO ₄ to pH <2, cool to 4°C
Chloride, Sulfate, pH, SC	500mL Plastic	Cool to 4°C
Dissolved Metals	250mL Plastic	HNO ₃ to pH <2, cool to 4°C

Table 4: Holding Times for Table 1 Parameters

<u>Parameters</u>	<u>Holding Time</u>
Sulfate, Chloride, Nitrate + Nitrite	28 days
pH, SC	Analyze Immediately
Dissolved Metals	6 months
VOCs	14 days (7 days if unpreserved)

FIGURES

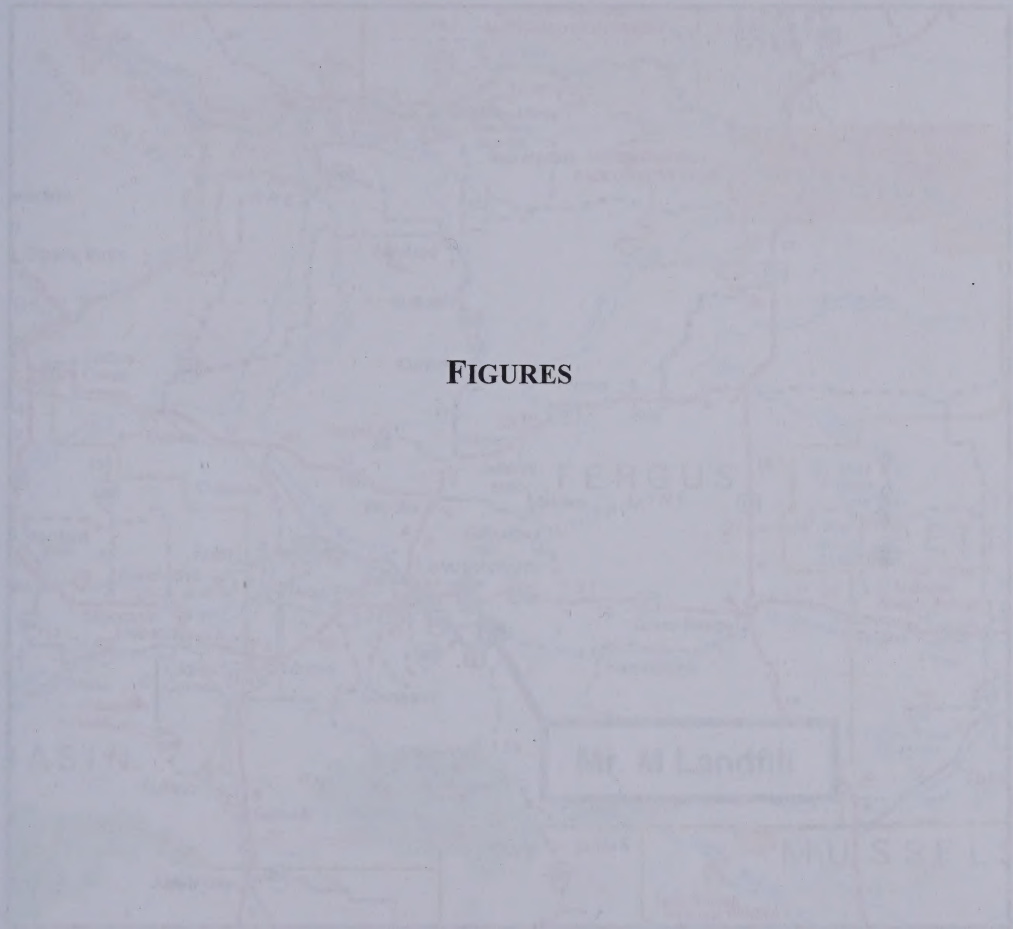


Figure 1: Location Map

Adapted from State of Montana Highway Map

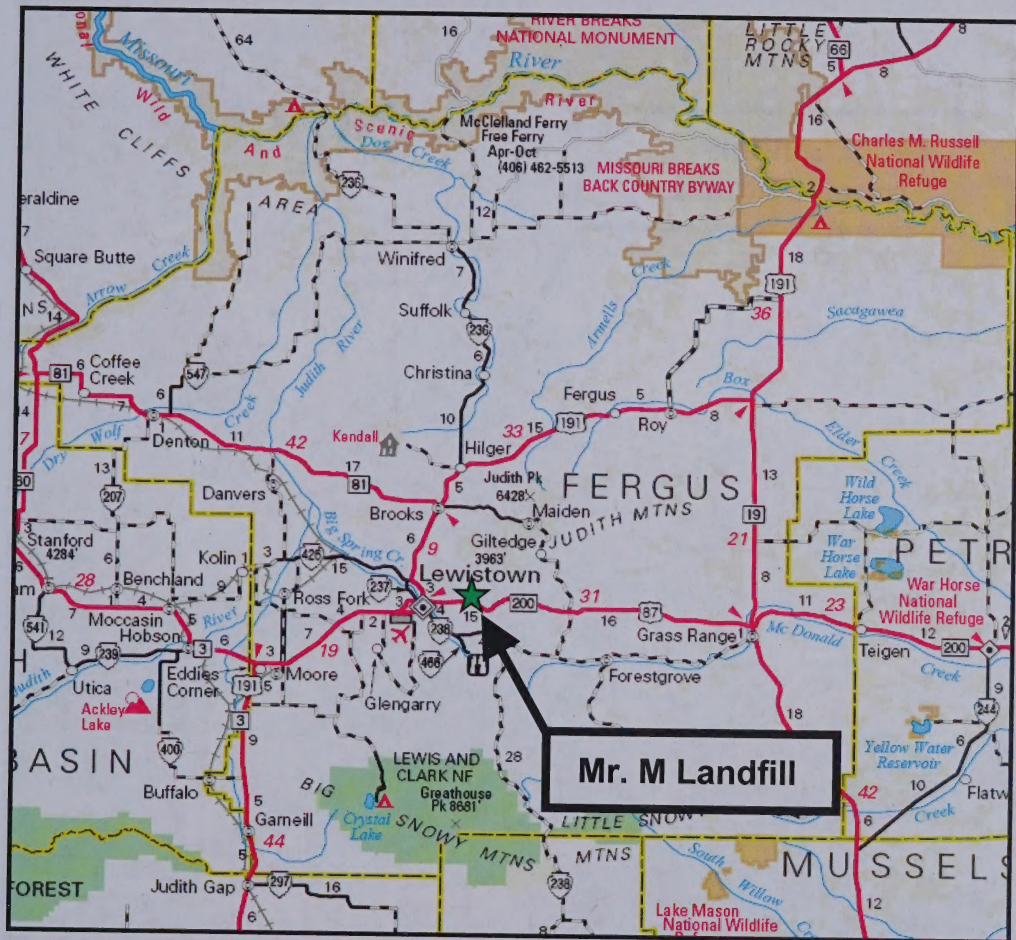


Figure 1: Location Map

Adapted from State of Montana Highway Map.

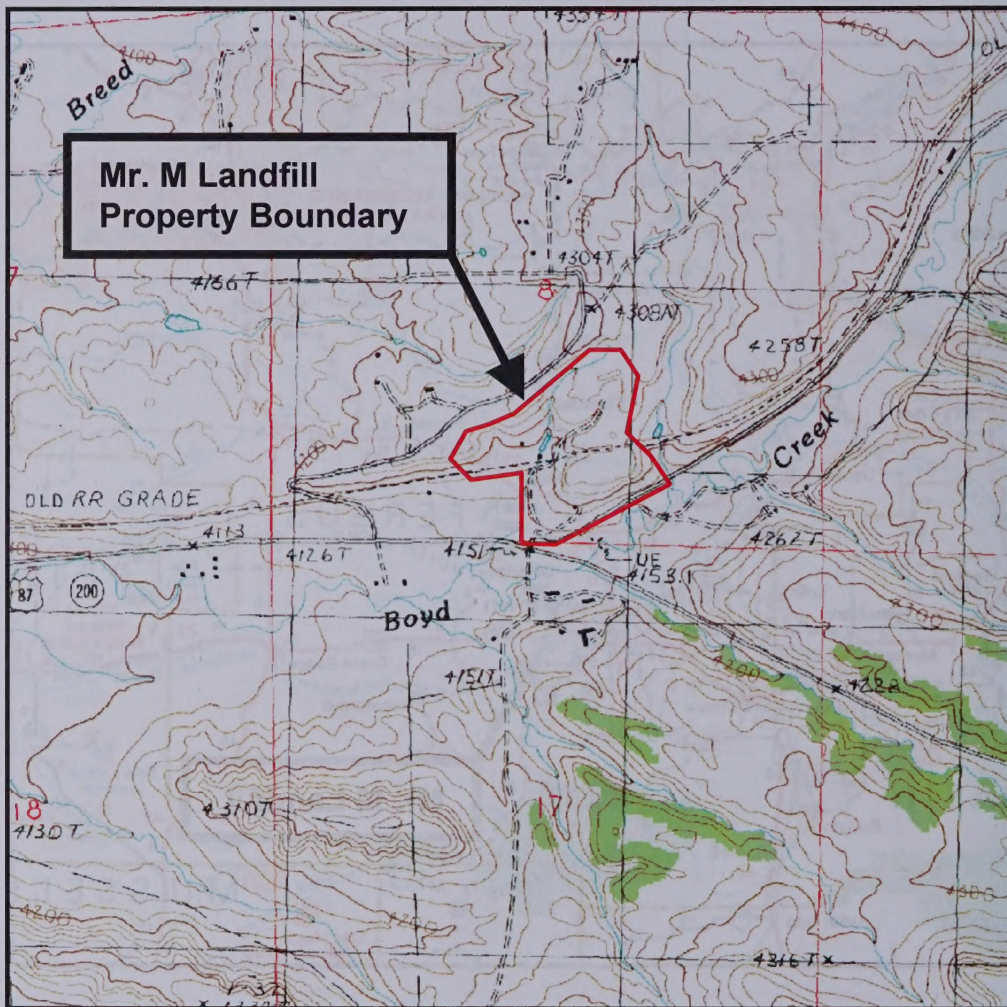


Figure 2: Facility Map

Adapted from USGS Pike Creek 24k Quadrangle.



Figure 3: Locations of Groundwater Monitoring Wells

Base Aerial Photo from 2004.

Adapted from Google Maps.

Water Level Measurement Form

Site Name: _____ Date: _____

Personnel: _____ Equipment: _____

Field Conditions: _____

[illegible]

Notes: _____

Signature: _____ Page _____ of _____

Water Quality Meter Calibration Form

Site Name: _____ Date: _____

Personnel: _____

Field Conditions: _____

Meter Model: _____

Parameters/Sensors: _____

[illegible]

Notes: _____

Signature: _____ Page ____ of ____

Monitoring Well Purging and Sampling Form

Site Name: _____ Sample Location: _____

Personnel: _____ Sample ID: _____

Date: _____ Field Conditions: _____

Condition of Well: _____

Depth to Water (DTW): _____ Total Depth of Well (TD): _____

Well Diameter: _____ Well Diameter Constant (C): 2" = 0.163 4" = 0.653 6" = 1.469

One Well Volume (gallons) = (TD - DTW) x C: _____ Three Well Volumes: _____

Purge Equipment: _____ Pump Depth: _____ Start Time: _____

[illegible]

Sample Time: _____ Sampling Method: _____

Containers	Preservative	Parameters	Comments
3 x 40mL Vial	HCl	VOCs	
500mL Plastic	none	Sulfate, Chloride, pH, SC	
250mL Plastic	HNO ₃	Dissolved Metals	
250mL Plastic	H ₂ SO ₄	Nitrate+Nitrite	

Total Volume Purged: _____ Final Depth to Water: _____ End Time: _____

Notes: _____

Sampler Signature: _____

Page 2 of 2

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Correspondence Slip

Project ID: _____

Requested: 2/25/10Needed By: 3/5/10Originator: MVD

Org(s)/Mail Code: _____

REVIEW
ROUTING

Name

Task

Initial/Date

AdminProofCh. 12-26-10Mary HReviewFile 13-5DunnellReviewApp 13/4/10Norm MillerReviewKT 13-8-2010RockReviewApp 13-8-2010

Mail original via:

☒ Regular ☐ Certified ☐ Registered ☐ FedEx

Fax to addressee at:

see edits

Proof Path: G:\WUT\

Mail copy of enclosures
to CC's? Y NCopies of enclosures
for file needed? Y NCopy of letter for file
needed? Y N

Special Instructions:

To be marked for Jennings Drilling, Controll
 Drilling, Singley Drilling, ~~Controll~~
~~Controll~~ See MVD for addresses

Also will be posted on DEQ procurement website

Closed

County FergusFacility & # Mexico M #302Closure LandfarmFinan Assur LinerGW Corr Meas MethaneGW Monitoring O & MGW Reports Run-on

Inspections

Other: _____

April 20, 2010

LIMITED SOLICITATION FOR:

Mister M Landfill Groundwater Monitoring Well Installation and Abandonment

The Montana Department of Environmental Quality (DEQ) is seeking a contractor to provide well drilling services for the installation of two new groundwater monitoring wells and the abandonment of four existing wells at the closed Mister M Landfill near Lewistown, Montana. Provided in the attached Model Contract and Scope of Work is a more complete description of the supplies and/or services. Proposals submitted in response to this limited solicitation must comply with the instructions and procedures contained herein. This solicitation is issued under the authority of Section 18-4-304, MCA (Montana Code Annotated) and ARM 2.5.602 (Administrative Rules of Montana).

The State of Montana will provide reasonable accommodations for any known disability that may interfere with a person participating in any service, program, or activity of the State. Requests for special accommodations can be directed to the procurement officer identified below.

The contract term begins upon signature, ending after all work is completed.

Contact information for this limited solicitation is as follows:

Procurement Officer: Martin Van Oort
Address: Solid Waste Section, P.O. Box 200901, Helena, MT 59620
Telephone Number: 406-444-2802
Fax Number: 406-444-1374
E-mail Address: mvanoort@mt.gov

Please submit bids to the DEQ, clearly labeled to indicate that they are in response to this limited solicitation for the Mister M Landfill Groundwater Monitoring Well Installation and Abandonment, DEQ Contract Number 510045. Bids should include a description of the drilling method proposed and an itemized accounting of proposed costs. Please prepare the bid for the expected total depths described in the scope of work and include the additional cost per foot if deeper wells are needed. ***Proposals must be received by the Department of Environmental Quality, Solid Waste Section, prior to 4:00pm, local time, May 6, 2010. Proposals must be in writing and may be received via regular mail, facsimile, or email.***

Regardless of cause, late proposals will not be accepted and will automatically be disqualified from further consideration. It is the contractor's sole risk to assure delivery by the designated time. Late proposals will not be opened and will be destroyed.

The costs for developing and delivering responses to this limited solicitation are entirely the responsibility of the contractor. The DEQ is not liable for any expense incurred by the contractor in the preparation and presentation of their bid or any other costs incurred by the contractor prior to execution of a Task Order.

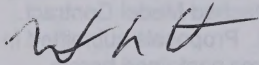
All materials submitted in response to this limited solicitation become the property of the DEQ and are to be appended to any formal documentation, which would further define or expand any contractual relationship between the DEQ and contractor resulting from this solicitation process.

While the DEQ has every intention to award a contract as a result of this limited solicitation, issuance of the solicitation in no way constitutes a commitment by the DEQ to award and execute a Task Order. Upon a determination such actions would be in its best interest, the DEQ, in its sole discretion, reserves the right to:

- cancel or terminate this limited solicitation (Mont. Code Ann. § 18-4-307);
- reject any or all proposals received in response to this limited solicitation (ARM 2.5.602);
- not award if it is in the best interest of the DEQ not to proceed with Task Order execution (ARM 2.5.602); or
- if awarded, terminate any contract if the State determines adequate state funds are not available (Mont. Code Ann. § 18-4-313).

DEQ appreciates your time and effort in providing a bid for the closed Mister M Landfill Groundwater Monitoring Well Installation and Abandonment.

Sincerely,



Martin Van Oort, Hydrogeologist
Solid Waste Section
Department of Environmental Quality

4.1.2.2. The State may withhold payment if Contractor has not performed in accordance with the Contract. Such withholding cannot be greater than the additional costs to the State caused by Contractor's lack of performance.

4.2. Contractor shall submit to the State a final billing statement that must be received by the State within 45 days after the completion date of the Contract, as stated in Section 2.1, or a new termination date as provided under this Contract, whichever occurs first.

4.3. Contractor shall not use the funds received under this Contract to supplant other Contractor budgeted expenses or funds.

5. ACCESS AND RETENTION OF RECORDS

5.1. Access to Records. The Contractor agrees to provide the State, Legislative Auditor or their authorized agents access to any records necessary to determine contract compliance. (Montana Code Annotated § 18-1-118.)

5.2. Retention Period. The Contractor agrees to create and retain records supporting the work done under this contract for a period of three years after either the completion date of this Contract or the conclusion of any claim, litigation or exception relating to this Contract taken by the State of Montana or a third party.

6. ASSIGNMENT, TRANSFER AND SUBCONTRACTING

The Contractor shall not assign, transfer or subcontract any portion of this Contract without the express written consent of the State. (Montana Code Annotated § 18-4-141.) The Contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

7. HOLD HARMLESS/INDEMNIFICATION

The Contractor agrees to protect, defend, and save the State, its elected and appointed officials, agents, and employees, and while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the Contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, or subcontractors, except for the sole negligence of the State, under this Contract.

8. REQUIRED INSURANCE

8.1. General Requirements. The Contractor shall maintain, for the duration of the Contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the Contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

8.2. Primary Insurance. The Contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

8.3. Specific Requirements for Commercial General Liability. The Contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury,

1. PARTIES

THIS CONTRACT, is entered into by and between the State of Montana Department of Environmental Quality, (hereinafter referred to as "the State"), and (insert name of Contractor), (hereinafter referred to as the "Contractor"). This Contract is entered into in accordance with Title 18, Montana Code Annotated (MCA), and the Administrative Rules of Montana (ARM), Title 2, chapter 5, for the purpose of the installation of two new groundwater monitoring wells and the abandonment of four existing groundwater monitoring wells.

THE PARTIES AGREE AS FOLLOWS:

2. EFFECTIVE DATE, DURATION, AND RENEWAL

2.1. Contract Term. This Contract shall take effect upon Contract execution and terminate upon completion of all tasks, not to exceed 60 days after Contract execution, unless terminated earlier in accordance with the terms of this Contract. (§ 18-4-313 MCA.)

3. SERVICES AND/OR SUPPLIES

Contractor shall:

3.1. Provide to the State the products and services, which are more fully described in Attachment A, Statement of Work, attached hereto and incorporated herein by reference.

3.2. Provide the State with an itemized billing statement submitted within 45 days of completion of work as required by Section 4.2.

3.3. Reference the Contract number on all invoices, packages, or correspondence pertaining to this Contract.

4. CONSIDERATION/PAYMENT

4.1. In consideration of services rendered pursuant to the Contract, the State shall reimburse Contractor up to a maximum of \$_____ for the actual, reasonable, and necessary expenditures allowed in section 4.1.1 below.

4.1.1. The allowable expense categories that may be reimbursed under this Contract for the performance of the services required are as follows (credit card receipts not acceptable):

4.1.1.1. Actual salaries, wages and benefits of Contractor personnel in performance of the services required under this Contract;

4.1.1.2. Travel expenses directly related to performance of the Contract. These will be reimbursed according to the rates set forth in Title 2, Chapter 18, Part 5, MCA;

4.1.1.3. Supplies and materials that are necessary in performance of the Contract, and the cost of developing the supplies and materials.

4.1.2. The State shall reimburse Contractor within 30 days after receipt of each billing statement, contingent upon the following:

4.1.2.1. Payment for questioned costs may be withheld pending resolution and may require rebilling by Contractor or submittal of additional documentation, including any records required to be kept by Contractor;

and property damage of **\$1,000,000** per occurrence and **\$2,000,000** aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors.

The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds for: liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations; and premises owned, leased, occupied, or used.

8.4. Deductibles and Self-Insured Retentions. Any deductible or self-insured retention must be declared to and approved by the State. At the request of the State either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the Contractor, the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

8.5. Certificate of Insurance/Endorsements. A certificate of insurance from an insurer with a Best's rating of no less than A-, indicating compliance with the required coverages, was received by the State prior to execution of this Contract. The Contractor must notify the State immediately of any material change in insurance coverage, such as changes in limits, coverages, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

9. COMPLIANCE WITH WORKERS' COMPENSATION ACT

Neither the Contractor nor its employees are employees of the State. Contractor and any subcontractor must comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with sections 39-71-401, 39-71-405, and 39-71-417, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. This insurance or exemption must be valid for the entire term of the Contract. If the insurance or exemption used as proof of compliance expires during the term of this Contract or a renewal, Contractor shall immediately send proof of current insurance/exemption.

10. COMPLIANCE WITH LAWS

The Contractor and any subcontractor must, in performance of work under this Contract, fully comply with all applicable federal, state, or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the Contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the Contract.

11. CONFLICT OF INTEREST

For the purposes of the Montana Code of Ethics, Contractor and each of its employees and subcontractors is a "public employee" for the purposes of this Contract. As such, Contractor and each of its employees and subcontractors is subject to the requirements of Title 2, Chapter 2, MCA, regarding conflicts of interest, including but not limited to sections 2-2-104, 2-2-105, 2-2-121, and 2-2-201, MCA.

If the State discovers that an employee of Contractor is in violation of this Section, the State may, after consulting with Contractor, terminate this Contract or take other appropriate measures to address the

conflict and Contractor shall reimburse the State for any services the State requires be performed by another Contractor that duplicate the services performed by the employee who violated this Section.

12. DISCLOSURE

Contractor agrees to notify the State of any actual, apparent, or potential conflict of interest with regard to any individual working on a work assignment or having access to information regarding a subcontract. Notification of any conflict of interest shall include both organizational conflicts of interest and personal conflicts of interest (which are defined as the same types of relationships as organizational conflicts of interest, but applicable to an individual). In the event that a personal conflict of interest exists, the individual who is affected shall be disqualified from taking part in any way in the performance of the assigned work that created the conflict of interest situation.

Contractor certifies that it has identified all current employees and proposed subcontractors' employees that have worked for the State of Montana in the last two years prior to submitting the Request for Proposal which resulted in the award of this Contract. Contractor further certifies that no former employee of DEQ, the State of Montana or local government may work under this Contract for a period of twelve months after voluntary termination of public employment, if by working under the Contract the employee will take direct advantage, unavailable to others, of matters with which the employee was directly involved during the employee's public employment. A former employee of state or local government may not, within 6 months following the termination of public employment, contract or be employed by an employer who contracts with the state or any of its subdivisions involving matters with which the former public employee was directly involved during employment. Contractor further certifies it shall identify any new employees hired during this Contract that have worked for the State of Montana in the last two years prior to submitting the Request for Proposal which resulted in the award of this Contract. Disclosure in all cases shall include the name of the agency and the nature of work performed by the employee.

13. CONTRACT TERMINATION

13.1. Termination for Cause. The State may, by written notice to the Contractor, terminate this Contract in whole or in part at any time the Contractor fails to perform this Contract.

13.2. Reduction of Funding. The State must terminate this contract if funds are not appropriated or otherwise made available to support the State's continuation of performance in a subsequent fiscal period. (See section 18-4-313(4), MCA.)

14. LIAISON AND SERVICE OF NOTICES

All project management and coordination on behalf of the State shall be through a single point of contact designated as the State's liaison. Contractor shall designate a liaison that will provide the single point of contact for management and coordination of Contractor's work. All work performed pursuant to this Contract shall be coordinated between the State's liaison and the Contractor's liaison.

Martin Van Oort will be the liaison for the State.
(Address): Solid Waste Section, P.O. Box 200901
(City, State, ZIP): Helena, MT 59620
Telephone: 406-444-2802
Cell Phone:
Fax: 406-444-1374
E-mail: mvanoort@mt.gov

(Insert Name) will be the liaison for the Contractor.
(Address):
(City, State, ZIP):
Telephone:

Cell Phone:
Fax:
E-mail:

The State's liaison and Contractor's liaison may be changed by written notice to the other party. Written notices, requests, or complaints will first be directed to the liaison.

15. MEETINGS

The Contractor is required to attend a pre-contract meeting in which the procedures for implementing the Contract will be discussed and agreed upon. The Contractor is required to meet with the State's personnel, or designated representatives, to resolve technical or Contractual problems that may occur during the term of the Contract or to discuss the progress made by Contractor and the State in the performance of their respective obligations, at no additional cost to the State. Meetings will occur as problems arise and will be coordinated by the State. The Contractor will be given a minimum of three full working days' notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings, two consecutive missed or rescheduled meetings, or failure to make a good faith effort to resolve problems may result in termination of the Contract.

16. CONTRACTOR PERFORMANCE ASSESSMENTS

The State may do assessments of the Contractor's performance. This Contract may be cancelled for one or more poor performance assessments. Contractors will have the opportunity to respond to poor performance assessments. The State will make any final decision to cancel this Contract based on the assessment and any related information, the Contractor's response and the severity of any negative performance assessment. The Contractor will be notified with a justification of Contract cancellation. Performance assessments may be considered in future solicitations.

17. CHOICE OF LAW AND VENUE

This Contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal or subsequent Contract must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (See Mont. Code Ann. § 18-1-401.)

18. SCOPE, AMENDMENT AND INTERPRETATION

18.1. Contract. This Contract consists of six numbered pages and any Attachments as required.

18.2. Entire Contract. These documents contain the entire Contract of the parties. Any enlargement, alteration or modification requires a written amendment signed by both parties.

19. EXECUTION

The parties through their authorized agents have executed this Contract on the dates set out below.

CONTRACTOR

DATE _____ BY: _____
NAME AND Title
Address _____

Federal Employer's ID No.: NUMBER

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

BY: _____

DATE _____

VICKI J. WOODROW, Contracts Officer

Financial Services
Metcalf Building, Room 003
1520 E. Sixth Avenue
Helena, MT 59620-0901

Approved as to Legal Content:

BY: _____

DATE _____

DEQ Attorney

SCOPE OF WORK

1. Task Objectives And Requirements

The Contractor shall provide services and staff, and otherwise do all things necessary for or incidental to the performance of work, as set forth below:

1.1. Project Tasks

1.1.1 Task 1

The contractor shall drill, install, and develop two groundwater monitoring wells at the closed Mister M Landfill according to the specifications described below. The closed Mister M Landfill is located approximately four miles east of Lewistown, Montana on US Highway 87 / MT Highway 200. The groundwater monitoring wells must be drilled and completed in accordance with the requirements in Administrative Rule of Montana (ARM) 17.50.1304, which refers to ARM Title 36, Chapter 21, Subchapters 4, 7 and 8. These requirements include restrictions on the use of drilling fluids unless necessary. A DEQ representative will be present to oversee the completion of this task, and will serve as the qualified ground water scientist described in ARM 17.50.1304(6)(b).

The contractor shall drill two boreholes with a minimum diameter of five inches through mixed shale and sandstone bedrock for the wells. The expected depths of the wells are 70 feet below ground surface and 80 feet below ground surface. The final depth for the boreholes will be determined by the DEQ representative based on the materials encountered and the presence of water. The total depth of the boreholes will not exceed 120 feet. The contractor shall collect subsurface material samples for on-site examination by the DEQ representative at a minimum interval of one sample per five feet, and more frequent samples may be requested by the DEQ representative based on the materials encountered.

The contractor shall provide all materials and install a two inch diameter groundwater monitoring well in each of the two boreholes described above. The monitoring wells must be constructed using ten foot long, two inch diameter schedule 40 PVC, 0.010 inch factory slotted screens, and two inch diameter schedule 40 PVC risers with threaded, water tight connections. The risers will extend from the top of the screens to approximately 2.5 feet above ground surface. The top of the risers shall be fitted with PVC J-plug caps. The wells shall be installed plumb and centered in the boreholes.

The contractor shall provide all materials and fill the annular space around each of the two wells as described below. The annular space around the well screens must be filled with a filter pack of #10-20 Colorado silica sand or equivalent from a depth of one foot below the bottom of the screens to two feet above the top of the screens. The sand must be emplaced slowly to prevent bridging and to promote even settling of the filter packs. Bentonite pellet seals at least two feet thick must be placed above the filter packs. The bentonite pellets must be added slowly to prevent bridging. The bentonite pellet seals must be hydrated with clean potable water. Grout or bentonite must be used to fill the remainder of the annular space from the top of the bentonite pellet seals to within two feet of the ground surface.

The contractor shall provide all materials and construct the surface completion of each of the two monitoring wells as described below. The surface completions for the monitoring wells must consist of minimum five inch diameter steel casings, which must extend at least two feet below ground surface and approximately 3 feet above ground surface. The steel casings must be fitted with hinged steel lids capable of being locked with a standard padlock. The DEQ shall provide the locks for the steel casings. The

steel casings shall be set in place in concrete surface pads at least two feet square and six inches thick. The top of the concrete pads must be sloped to promote drainage away from the well casings.

The contractor must develop each of the two monitoring wells to remove all fines, drill cuttings, and drilling fluids from the vicinity of the well screens. Development of the wells may not be conducted until at least 12 hours after emplacement and hydration of the bentonite pellet seals. The contractor shall supply the pump and power source for development of the wells. The DEQ representative shall provide a water quality meter, monitor the progress of the well development, and shall determine when the wells are adequately developed.

1.1.2 Task 2

The contractor shall provide all materials and abandon four groundwater monitoring wells at the closed Mr. M Landfill according to the specifications described below. The groundwater monitoring wells must be abandoned in accordance with the requirements in ARM 17.50.1312. All four of the wells are constructed with PVC casings. Two of the wells to be abandoned have 2-inch diameter casings, and are 20 feet deep and 50 feet deep. Two of the wells to be abandoned have 4-inch diameter casings, and are 20 feet deep and 25 feet deep. A DEQ representative will be present to oversee the completion of this task.

The contractor shall abandon the wells according to the procedure described below. The external surface casing shall be removed. The contractor may take the external steel casings from the abandoned wells for reuse or recycling as scrap metal. The inner PVC casings shall be removed if possible, or cut off below ground level. The contractor must dispose of the removed PVC casings off site. The resulting hole or remaining casing shall be filled with grout or bentonite to within two feet of the surface. The remainder of the hole shall be backfilled with clean fill, compacted, and restored to the original grade. The PVC caps and the locks from the abandoned wells shall remain the property of the DEQ.

1.2. Acceptance Criteria

A representative of the DEQ will be present at the time the work is performed and will inspect the work for completeness prior to the contractor leaving the site. The DEQ representative will provide the contractor with written approval of completeness of the work before leaving the site.

2. Timeline and Period of Performance

The period of performance for this project will start on the date a contract is awarded and the work tasks are estimated to continue through the completion of all tasks, not to exceed 60 days after the contract is awarded. The State has the right to extend or terminate this Scope of Work at its sole discretion.

Jennings Drilling Co
PO Box 881
Lewistown, MT 59457

Central Drilling, Inc.
969 H Street
Lewistown, MT 59457

Singley Drilling
1020 West Water Street
Lewistown, MT 59457

Here are the addresses for
the drillers in Lewistown.

I have attached 3 copies of
the cover letter with original
signatures, the remainder of the
document can be copied.

Correspondence Slip

Project ID: _____

Requested: 2/11/10

Needed By: 3/1/10

Originator: MVO

Org(s)/Mail Code: _____

REVIEW
ROUTING

Name

Task

Initial/Date

Admin Mary H

Proof Review

MH 12-16

Darrell

SS 12-16

Rick

RT 12-16

Nancy Muller

NM 12-23/10

Vicki Woodrow

YWS 2/23/10

Mail original via:

☐ Regular ☐ Certified ☐ Registered ☒ FedEx

Fax to addressee at: _____

Proof Path: G:\WUT_____

Mail copy of enclosures to CC's? Y N

Special Instructions:

Spec Memo

Copies of enclosures for file needed? Y N

Return to Martin

Copy of letter for file needed? Y N

Closed

County Argus

Facility & # Mish M #302

Closure Landfarm

Finan Assur Liner

GW Corr Meas Methane

GW Monitoring O & M

GW Reports Run-on

Inspections

Other: _____



Montana Department of
ENVIRONMENTAL QUALITY

MEMO

TO: Mary Hendrickson, Darrell Stankey, Rick Thompson – Solid Waste Section,
Norm Mullen – Legal, Vicki Woodrow – Fiscal

FROM: Martin Van Oort, Hydrogeologist – Solid Waste Section

DATE: February 11, 2010

SUBJECT: **Draft solicitation materials for new well and well abandonment at the closed Mister M Landfill.**

Attached are the draft solicitation materials for the planned well installation and abandonment work at the closed Mister M Landfill. They include a cover letter, a model contract, and the scope of work. This would be a limited solicitation because the cost of the work will not exceed \$25,000. My rough estimate of the cost is \$5,000 – \$7,500. I am hoping to have this work performed in April or May, and thus would like to issue the solicitation in early March. Please review the attached materials and provide me with comments. If you would like an electronic copy of any of the files to edit, please let me know and I can email them to you. The final copy of these materials will be routed again for final approval when all comments/edits are incorporated.

Please route these materials in the order listed in the TO field above, and initial and date next to your name when completed.

Thank you.



Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor

PO Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

February xx, 2010

LIMITED SOLICITATION FOR:

Mister M Landfill Groundwater Monitoring Well Installation and Abandonment

The Montana Department of Environmental Quality (DEQ) is seeking a contractor to provide well drilling services for the installation of a new groundwater monitoring well at the Mister M Landfill and the abandonment of three existing wells. Provided in the attached Scope of Work is a more complete description of the supplies and/or services. Proposals submitted in response to this limited solicitation must comply with the instructions and procedures contained herein. This solicitation is issued under the authority of section 18-4-304, MCA (Montana Code Annotated) and ARM 2.5.602 (Administrative Rules of Montana).

The State of Montana will provide reasonable accommodations for any known disability that may interfere with a person participating in any service, program, or activity of the State. Requests for special accommodations can be directed to the procurement officer identified below.

Contract term begins upon signature, ending after work is completed.

Contact information for this limited solicitation is follows:

Procurement Officer: Martin Van Oort
Address: Solid Waste Section, P.O. Box 200901, Helena, MT 59620
Telephone Number: 406-444-2802
Fax Number: 406-444-1374
E-mail Address: mvanoort@mt.gov

Please submit bids to the DEQ, clearly labeled to indicate that they are in response to this limited solicitation for the Mister M Landfill Groundwater Monitoring Well Installation and Abandonment.

Proposals must be received by the Department of Environmental Quality, Solid Waste Section prior to insert time, local time, insert date. Proposals must be in writing and may be received via regular mail, facsimile, or email.

Regardless of cause, late proposals will not be accepted and will automatically be disqualified from further consideration. It is the contractor's sole risk to assure delivery by the designated time. Late proposals will not be opened and will be destroyed.

The costs for developing and delivering responses to this limited solicitation are entirely the responsibility of the contractor. The DEQ is not liable for any expense incurred by the contractor in the preparation and presentation of their bid or any other costs incurred by the contractor prior to execution of a Task Order.

All materials submitted in response to this limited solicitation become the property of the DEQ and are to be appended to any formal documentation, which would further define or expand any contractual relationship between the DEQ and contractor resulting from this solicitation process.

While the DEQ has every intention to award a contract as a result of this limited solicitation, issuance of the solicitation in no way constitutes a commitment by the DEQ to award and execute a Task Order. Upon a determination such actions would be in its best interest, the Department of Environmental Quality, in its sole discretion, reserves the right to:

- cancel or terminate this limited solicitation (Mont. Code Ann. § 18-4-307);
- reject any or all proposals received in response to this limited solicitation (ARM 2.5.602);
- not award if it is in the best interest of the DEQ not to proceed with Task Order execution (ARM 2.5.602); or
- if awarded, terminate any contract if the State determines adequate state funds are not available (Mont. Code Ann. § 18-4-313).

DEQ appreciates your time and effort in providing a bid for the Mister M Landfill Groundwater Monitoring Well Installation and Abandonment.

Sincerely,

Vicki J. Woodrow, Contracts Officer
Financial Services
Department of Environmental Quality

1. PARTIES

THIS CONTRACT, is entered into by and between the State of Montana Department of Environmental Quality, (hereinafter referred to as "the State"), and (insert name of Contractor), (hereinafter referred to as the "Contractor"). This Contract is entered into in accordance with Title 18, Montana Code Annotated (MCA), and the Administrative Rules of Montana (ARM), Title 2, chapter 5, for the purpose of the installation of one new groundwater monitoring well and the abandonment of three existing groundwater monitoring wells.

THE PARTIES AGREE AS FOLLOWS:

2. EFFECTIVE DATE, DURATION, AND RENEWAL

2.1. Contract Term. This Contract shall take effect upon Contract execution and terminate upon completion of all tasks, not to exceed 60 days after Contract execution, unless terminated earlier in accordance with the terms of this Contract. (§ 18-4-313 MCA.)

3. SERVICES AND/OR SUPPLIES

Contractor agrees to provide to the State the following:

3.1. ~~Contractor agrees to provide to the State the products and services, which are more fully described in Attachment A, Statement of Work, attached hereto and incorporated herein by reference.~~

3.2. Provide DEQ with an itemized billing statement submitted within 45 days of completion of work as required by Section 4.2.

3.3. Reference the Contract number on all invoices, packages, or correspondence pertaining to this Contract.

4. CONSIDERATION/PAYMENT

4.1. In consideration of services rendered pursuant to the Contract, the State ^{shall} agrees to reimburse Contractor up to a maximum of \$_____ for the actual, reasonable, and necessary expenditures allowed in section 4.1.1 below, according to the budget amounts identified in Attachment B.

4.1.1. The allowable expense categories that may be reimbursed under this Contract for the performance of the services required are as follows (credit card receipts not acceptable):

4.1.1.1. Actual salaries, wages and benefits of Contractor personnel in performance of the services required under this Contract;

4.1.1.2. Travel expenses directly related to performance of the Contract. These will be reimbursed according to the rates set forth in Title 2, Chapter 18, Part 5, MCA;

4.1.1.3. Supplies and materials that are necessary in performance of the Contract, including newsletter/articles and display boards, and the cost of developing the supplies and materials;

~~4.1.1.4. Communications and reproduction expenses, that are necessary in performance of the Contract, including telephone, postage, facsimiles and photocopying;~~

~~4.1.1.5.~~ Subcontractor expenses, including landowner agreements (subcontractor expenses must be documented in the detail required of Contractor to qualify for payment under this Contract);

~~4.1.1.6.~~ Contractor's administrative expenses for overseeing completion of the project required by the Contract, not to exceed a maximum of \$_____ and to be billed on each invoice at the rate of _____% of the total allowable expenses (a) through (g) above that are incurred during the invoice period.

Blanket
4.1.2. DEQ will reimburse Contractor within 30 days after receipt of each billing statement, contingent upon the following:

4.1.2.1. Payment for questioned costs may be withheld pending resolution and may require rebilling by Contractor or submittal of additional documentation, including any records required to be kept by Contractor;

State
4.1.2.2. DEQ may withhold payment if Contractor has not performed in accordance with the Contract. Such withholding cannot be greater than the additional costs to DEQ caused by Contractor's lack of performance.

4.2. Contractor shall submit to the State a final billing statement that must be received by the State within 45 days of the completion date of the Contract, as stated in Section 2.1, or a new termination date as provided under this Contract, whichever occurs first.

4.3. Contractor shall not use the funds received under this Contract to supplant other Contractor budgeted expenses or funds.

5. ACCESS AND RETENTION OF RECORDS

5.1. Access to Records. The Contractor agrees to provide the State, Legislative Auditor or their authorized agents access to any records necessary to determine contract compliance. (Montana Code Annotated § 18-1-118.)

5.2. Retention Period. The Contractor agrees to create and retain records supporting the groundwater monitoring well installation and abandonment for a period of three years after either the completion date of this Contract or the conclusion of any claim, litigation or exception relating to this Contract taken by the State of Montana or a third party.

6. ASSIGNMENT, TRANSFER AND SUBCONTRACTING

The Contractor may not assign, transfer or subcontract any portion of this Contract without the express written consent of the State. (Montana Code Annotated § 18-4-141.) The Contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

7. HOLD HARMLESS/INDEMNIFICATION

The Contractor agrees to protect, defend, and save the State, its elected and appointed officials, agents, and employees, and while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the Contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, or subcontractors, except for the sole negligence of the State, under this Contract.

8. REQUIRED INSURANCE

8.1. General Requirements. The Contractor shall maintain, for the duration of the Contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the Contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

8.2. Primary Insurance. The Contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

8.3. Specific Requirements for Commercial General Liability. The Contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property damage of **\$1,000,000** per occurrence and **\$2,000,000** aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors.

The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds for: liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations; and premises owned, leased, occupied, or used.

8.4. Deductibles and Self-Insured Retentions. Any deductible or self-insured retention must be declared to and approved by the State. At the request of the State either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the Contractor, the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

8.5. Certificate of Insurance/Endorsements. A certificate of insurance from an insurer with a Best's rating of no less than A-, indicating compliance with the required coverages, was received by the Department of Environmental Quality prior to execution of this Contract. The Contractor must notify the State immediately of any material change in insurance coverage, such as changes in limits, coverages, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

9. COMPLIANCE WITH WORKERS' COMPENSATION ACT

Neither the Contractor nor its employees are employees of the State. Contractor and any subcontractor must comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with sections 39-71-401, 39-71-405, and 39-71-417, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. This insurance or exemption must be valid for the entire term of the Contract. If the insurance or exemption used as proof of compliance expires during the term of this Contract or a renewal, Contractor shall immediately send proof of current insurance/exemption.

10. COMPLIANCE WITH LAWS

The Contractor and any subcontractor must, in performance of work under this Contract, fully comply with all applicable federal, state, or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with

section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the Contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the Contract.

11. CONFLICT OF INTEREST

For the purposes of the Montana Code of Ethics, Contractor and each of its employees and subcontractors is a "public employee" for the purposes of this Contract. As such, Contractor and each of its employees and subcontractors is subject to the requirements of Title 2, Chapter 2, MCA, regarding conflicts of interest, including but not limited to sections 2-2-104, 2-2-105, 2-2-121, and 2-2-201, MCA.

If DEQ discovers that an employee of Contractor is in violation of this Section, DEQ may, after consulting with Contractor, terminate this Contract or take other appropriate measures to address the conflict and Contractor shall reimburse DEQ for any services DEQ requires be performed by another Contractor that duplicate the services performed by the employee who violated this Section.

12. DISCLOSURE

Contractor agrees to notify DEQ of any actual, apparent, or potential conflict of interest with regard to any individual working on a work assignment or having access to information regarding a subcontract. Notification of any conflict of interest shall include both organizational conflicts of interest and personal conflicts of interest (which are defined as the same types of relationships as organizational conflicts of interest, but applicable to an individual). In the event that a personal conflict of interest exists, the individual who is affected shall be disqualified from taking part in any way in the performance of the assigned work that created the conflict of interest situation.

Contractor certifies that it has identified all current employees and proposed subcontractors' employees that have worked for the State of Montana in the last two years prior to submitting the Request for Proposal which resulted in the award of this Contract. Contractor further certifies that no former employee of DEQ, the State of Montana or local government may work under this Contract for a period of twelve months after voluntary termination of public employment, if by working under the Contract the employee will take direct advantage, unavailable to others, of matters with which the employee was directly involved during the employee's public employment. A former employee of state or local government may not, within 6 months following the termination of public employment, contract or be employed by an employer who contracts with the state or any of its subdivisions involving matters with which the former public employee was directly involved during employment. Contractor further certifies it shall identify any new employees hired during this Contract that have worked for the State of Montana in the last two years prior to submitting the Request for Proposal which resulted in the award of this Contract. Disclosure in all cases shall include the name of the agency and the nature of work performed by the employee.

13. CONTRACT TERMINATION

13.1. Termination for Cause. The State may, by written notice to the Contractor, terminate this Contract in whole or in part at any time the Contractor fails to perform this Contract.

13.2. Reduction of Funding. The State must terminate this contract if funds are not appropriated or otherwise made available to support the State's continuation of performance in a subsequent fiscal period. (See section 18-4-313(4), MCA.)

14. LIAISON AND SERVICE OF NOTICES

All project management and coordination on behalf of the State shall be through a single point of contact designated as the State's liaison. Contractor shall designate a liaison that will provide the single

point of contact for management and coordination of Contractor's work. All work performed pursuant to this Contract shall be coordinated between the State's liaison and the Contractor's liaison.

Martin Van Oort will be the liaison for the State.
(Address): Solid Waste Section, P.O. Box 200901
(City, State, ZIP): Helena, MT 59620
Telephone: 406-444-2802
Cell Phone:
Fax: 406-444-1374
E-mail: mvanoort@mt.gov

(Insert Name) will be the liaison for the Contractor.
(Address):
(City, State, ZIP):
Telephone:
Cell Phone:
Fax:
E-mail:

The State's liaison and Contractor's liaison may be changed by written notice to the other party. Written notices, requests, or complaints will first be directed to the liaison.

15. MEETINGS

The Contractor is required to attend a pre-contract meeting in which the procedures for implementing the Contract will be discussed and agreed upon. The Contractor is required to meet with the State's personnel, or designated representatives, to resolve technical or Contractual problems that may occur during the term of the Contract or to discuss the progress made by Contractor and the State in the performance of their respective obligations, at no additional cost to the State. Meetings will occur as problems arise and will be coordinated by the State. The Contractor will be given a minimum of three full working days notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings, two consecutive missed or rescheduled meetings, or failure to make a good faith effort to resolve problems may result in termination of the Contract.

16. CONTRACTOR PERFORMANCE ASSESSMENTS

The State may do assessments of the Contractor's performance. This Contract may be cancelled for one or more poor performance assessments. Contractors will have the opportunity to respond to poor performance assessments. The State will make any final decision to cancel this Contract based on the assessment and any related information, the Contractor's response and the severity of any negative performance assessment. The Contractor will be notified with a justification of Contract cancellation. Performance assessments may be considered in future solicitations.

17. CHOICE OF LAW AND VENUE

This Contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal or subsequent Contract must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (See Mont. Code Ann. § 18-1-401.)

18. SCOPE, AMENDMENT AND INTERPRETATION

18.1. Contract. This Contract consists of six numbered pages and any Attachments as required.

18.2. Entire Contract. These documents contain the entire Contract of the parties. Any enlargement, alteration or modification requires a written amendment signed by both parties.

19. EXECUTION

The parties through their authorized agents have executed this Contract on the dates set out below.

CONTRACTOR

DATE

BY: _____
NAME AND Title

Address

Federal Employer's ID No.: NUMBER

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

DATE

BY: _____
VICKI J. WOODROW, Contracts Officer

Financial Services
Metcalf Building, Room 003
1520 E. Sixth Avenue
Helena, MT 59620-0901

Approved as to Legal Content:

DATE

BY: _____
DEQ Attorney

SCOPE OF WORK

1. Task Objectives And Requirements

Contractor shall provide services and staff, and otherwise do all things necessary for or incidental to the performance of work, as set forth below:

1.1. Project Tasks

1.1.1 Task 1

The contractor shall drill, install, and develop a groundwater monitoring well at the closed Mr. M Landfill according to the specifications described below. The closed Mr. M Landfill is located approximately four miles east of Lewistown, Montana on US Highway 87 / MT Highway 200. The groundwater monitoring well must be drilled and completed in accordance with the requirements in Administrative Rule of Montana (ARM) 17.50.707. A DEQ representative will be present to oversee the completion of this task, and will serve as the qualified person described in ARM 17.50.707(6).

The contractor shall drill a minimum of five inch diameter borehole through mixed shale and sandstone bedrock to an expected depth of 70 feet below ground surface. The final depth for the borehole will be determined by the DEQ representative based on the materials encountered and the presence of water. The total depth of the borehole will not exceed 120 feet. The contractor shall collect subsurface material samples for on-site examination by the DEQ representative at a minimum interval of one sample per five feet, and more frequent samples may be requested by the DEQ representative based on the materials encountered.

The contractor shall provide all materials for and install a two inch diameter groundwater monitoring well in the borehole described above. The monitoring well must be constructed using a ten foot long, two inch diameter schedule 40 PVC, 0.010 inch factory slotted screen, and two inch diameter schedule 40 PVC risers with threaded, water tight connections. The risers will extend from the top of the screen to approximately 2.5 feet above ground surface. The top of the riser shall be fitted with a PVC J-plug cap. The well shall be installed plumb and centered in the borehole.

The contractor shall provide all materials and fill the annular space around the well as described below. The annular space around the well screen must be filled with a filter pack of #10-20 Colorado silica sand or equivalent from a depth of one foot below the bottom of the screen to two feet above the top of the screen. The sand must be emplaced slowly to prevent bridging and to promote even settling of the filter pack. A bentonite pellet seal at least two feet thick must be placed above the filter pack. The bentonite pellets must be added slowly to prevent bridging. The bentonite pellet seal must be hydrated with clean potable water. Grout or bentonite must be used to fill the remainder of the annular space from the top of the bentonite pellet seal to within two feet of the ground surface.

The contractor shall provide all materials and construct the surface completion of the monitoring well as described below. The surface completion for the monitoring well must consist of a minimum five inch diameter steel casing, which must extend at least two feet below ground surface and approximately 3 feet above ground surface. The steel casing must be fitted with a hinged steel lid capable of being locked with a standard padlock. The DEQ shall provide the lock for the steel casing. The steel casing shall be set in place in a concrete surface pad at least two feet square and six inches thick. The top of the concrete pad must be sloped to promote drainage away from the well casing.

The contractor must develop the monitoring well to remove all fines, drill cuttings, and drilling fluids from the vicinity of the well screen. Development of the well may not be conducted until at least 12 hours after emplacement and hydration of the bentonite pellet seal. The contractor shall supply the pump and power source for development of the well. The DEQ representative shall provide a water quality meter, monitor the progress of the well development, and shall determine when the well is adequately developed.

1.1.2 Task 2

The contractor shall provide all materials and abandon three groundwater monitoring wells at the closed Mr. M Landfill according to the specifications described below. The groundwater monitoring wells must be abandoned in accordance with the requirements in ARM 17.50.722. Two of the wells to be abandoned are 20 feet deep and the third is 25 feet deep. All three wells are constructed with two inch diameter PVC casings. A DEQ representative will be present to oversee the completion of this task.

The wells shall be abandoned by removing the external surface casing, overdrilling the well to the total depth of the well, and filling the resulting borehole with grout or bentonite to within two feet of the surface. The remainder of the borehole shall be backfilled with clean drill cuttings. The contractor must containerize all drill cuttings containing remains of the PVC casing and dispose of them off site. The contractor may take the external steel casings from the abandoned wells for reuse or recycling as scrap metal. The PVC caps and locks from the abandoned wells shall remain the property of the DEQ.

1.2. Acceptance Criteria

A representative of the DEQ will be present at the time the work is performed and will inspect the work for completeness prior to the contractor leaving the site. The DEQ representative will provide the contractor with written approval of completeness of the work before leaving the site.

2. Timeline and Period of Performance

The period of performance for this project will start on the date a contract is awarded and the work tasks are estimated to continue through the completion of all tasks, not to exceed 60 days after the contract is awarded. The State has the right to extend or terminate this SOW at its sole discretion.